Title of the Research:

EXPLORATION OF VALUE ADDITION IN HANDLOOM TEXTILES AND APPARELS

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1. Introduction

The word 'handloom' refers to any loom other than power loom and the cloth produced in such a loom is termed as handloom cloth. The handloom sector is one of the largest unorganised economic activities which constitute an integral part of the rural and semi-rural livelihood. This Industry is based largely in a domestic set up and spread across a large number of villages and towns within the country with a certain distinction of its own. It also demonstrates the richness and diversity of Indian culture. This heritage industry plays a very imperative role in the India's economy and has the potential to create ample opportunities of employment generation amongst the rural people [1]. It is one of the largest economic activities after agriculture providing direct and indirect employment to more than 43 lakh weavers and allied workers [2]. The people engaged in this profession are mainly from the vulnerable and weaker section of the society, but they are responsible for keeping alive the traditional craft of different states. This sector contributes nearby 15% of the total cloth produced by the country and also responsible to the export earnings. 95% of the world's hand woven fabric comes from India [3]. One of the prime advantages for handloom sectors is its ability to introduce a variety of aesthetic innovations through experimentation. This industry generates production at low capital cost, mostly using indigenous raw material and utilizing local resources, widens entrepreneurial base, facilitates balanced regional growth and prevents the migration of labour to the metropolitan areas [4]. According to the Annual report 2015-16 of Ministry of Textiles, the adoption of modern techniques and economic liberalization has made serious inroads into the handloom sector apart from the availability of cheaper imported fabrics, changing consumer preferences and alternative employment opportunities. The main challenges face by the handloom sectors are (i) competition with the power looms, (ii) poor wages system, (iii) escalation of yarn price, (iv) labour shortage, (v) labour problem, (vi) health problem, (vii) traditional production techniques, (viii) consumer preference, etc. [2, 5].

2. Review of literatures

Handloom textiles constitute a timeless facet of the rich cultural heritage of India and form a precious part of the generational legacy. It exemplifies the richness and diversity of our culture and the artistry of the weavers. The tradition of weaving by hand is a part of the country's cultural ethos. The use of handloom textiles is abundant in the recorded details of epics like the Ramayana and the Mahabharata. The Harappa and Mohanjodoro civilizations reveal the use of woollen and decorative textiles produced in handloom [6]. Handloom weaving and its related activities became symbolic for the Indian independents struggle. In the present economic climate the handloom industry presents a sustainable model of economic activity which is environmental friendly, energy saving, as well as an extensive skill base and also provides employment for the women labour force at family

environment and laid the foundation stone of women's leadership and empowerment. This sector has a great deal of potential for further value addition in the Ready Made Garment (RMG) sector for further meeting local needs of fabrics and expanding sales of its products directly in foreign countries with an balanced sustainable economic growth. Several studies have been conducted by the different researchers on the socio-economic aspects and managerial issues related to handloom weavers in different states of India [2, 6-12]. Some of the authors have also reported the working condition and prevalence of low back pain among the handloom weavers [13, 14]. The role of designers and SME'S in relation to the globalization of handloom sector has also been reported by various researchers [15-17]. The pollution caused in the aquatic ecosystem from effluent of handloom industries is also been studied [18]. Shafinaz, et.al has reported comparative studies on the woven fabric produced in handloom and power loom [19]. A case study on sustainable and ethical manufacturing of handloom industry is also been reported [20]. Some studies on traditional handloom weaving of different states in north-east region of our country is also reported by different authors [21, 22]. Handloom sector also has the tradition of transferring skills from one generation to another, but the younger generation is not keen enough to pursue their profession in this traditional process of making cloth. Hence to attract the new generation product diversification and value-addition through design innovation, dyeing, printing, surface ornamentation and application of certain functional finishes is essential in order to attract the consumers. It is also very important to create awareness about the importance of handloom industry and its contribution to the socio-economic development of the country and to increase income of weavers and enhance their pride in particular. Few researchers have worked on the value addition in handloom textiles [23-26].

3. **Objectives of the present work**

Keeping the scope and limitations of handloom sector in mind there is a need for enhancing the value of handloom products through:

- Utilization of different types of natural fibres viz. silk, linen, cotton etc for producing value added handloom textiles with modification in handloom if required.
- Amalgamation of various traditional motifs to create contemporary design looks.
- Application of natural and eco-friendly dyes to create sustainable design.
- Use of various surface ornamentation techniques in order to produce value-added handloom textiles and apparels which may improve the livelihood of the artisans associated with this profession.
- Application of certain functional finishes for the high end brand.

Accordingly the plan of work may be drawn in line with the objectives outline above.

4. Plan of the work

The plan of work may be divided in different categories

4.1. Collection of raw materials

Yarns made of different natural fibres viz. cotton, silk, linen etc will be procured / collected from various sources for producing handloom fabrics. Various kinds of natural and other eco-friendly dyes along with other necessary chemicals will also be purchased or collected. Loom state handloom fabrics will be procured from the market for specified applications.

4.2 Preparatory chemical processes

An eco-friendly route will be followed for the preparation of the substrates in order to carry on subsequent chemical processes efficiently.

4.3 Fabric formation

The fabrics will be developed in handloom through various preparatory steps viz. bobbin winding, beam warping, drawing and denting, looming, pirn winding etc prior to weaving. The fabrics will be produced according to the design and pattern.

4.4 Application of natural/eco-friendly dyes

Yarns and fabrics will be dyed and/or printed with natural dyes following the standard procedures [27]. Other eco-friendly dyes may also be used if required. Effect of variation in dye and mordant concentrations, temperature, duration of dyeing etc will also be studied. Different colourfastness properties of those dyed and printed materials will also be assessed. The surface dye receptivity and/or bulk dye uptake will be assessed and analysed.

4.5 Surface ornamentation techniques

Surface ornamentation is the technique that manipulates or changes the surface of a fabric or apparels. It purely depends on the creativity of the designer and there are no limits for this. Different surface ornamentation techniques viz. resist techniques, printing , painting, appliqué , patch work, quilting, gathering**,** hand-tufted, lacework, slashing multilayer fabric swatches, pleat and tuck techniques, embroidery, haphazard laying of loose threads etc will be performed in order to produce value-added handloom textiles.

4.6 Application of various functional finishes

Different finishing agents will be applied on various substrates following either exhaust or pad-dry-cure techniques in order to achieve desired property profiles on handloom products. Associated changes in functional properties in consequent to such applications would also be selectively assessed in terms of thickness, wrinkle recovery properties, tensile properties, flexural rigidity, fabric drape etc to identify best set of conditions that will produce balanced improvement of properties profiles of handloom textile.

4.7 Apparel manufacturing

Finally from those developed fabrics a range of apparels will be made.

5. Testing and Characterization

Handloom textiles as specified would be assessed and analysed for colourfastness properties, surface dye receptivity, tensile strength, wrinkle recovery, bending length, drape co-efficient and other properties as would be required employing test methods provided by different national/international standard bodies such as BIS, ASTM, AATCC, etc.

List of some of the test methods that may be followed are summerised below:

- Assessment of colourfastness to washing : IS:3361-1984
- Assessment of colourfastness to light :IS:2454:1984
- Assessment of colourfastness to rubbing : IS:766:1984
- Wrinkle recovery properties : ASTM-D-1295-67
- Tensile properties : IS:1969-1968
- Flexural rigidity : IS:6490 – 1971 (Cantilever test)
- Fabric thickness : IS: 7702 – 2012
- Assessment of fabric drape : IS: 8357 – 1977

Reflectance and UV-visible spectroscopic technique, scanning electron microscopic methods etc will also term a major means of analysis and assessment of the dyed and finished handloom textiles.

6. Expected Outcome

This research work is an attempt to produce hand woven fabric and apparel by using natural dyes, traditional motif, different surface ornamentation techniques and functional finishes to create an aesthetic design look for the ever changing consumer needs. Outcome of this research can be transferred to the artisans involved in the profession of handloom industry. It may protect the economically poor rural artisans involved in the traditional process of handloom weaving and its related activities. The introduction of value added eco-friendly handloom products may motivate the new generation to engage in this traditional heritage and in this way our traditional art can be preserved.

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